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Essays in voluntary disclosure and information sharing

Autor:

Gilberto Márquez Illescas

Director/es:

Susana Gago Rodríguez

Manuel Núñez Nickel

DEPARTAMENTO DE ECONOMIA DE EMPRESA

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RESUMEN

El objetivo de esta tesis es identificar y analizar nuevos factores, no investigados previamente por la literatura contable, que incentiven la revelación voluntaria de información. Puesto que las consecuencias de revelar información varían en función del entorno en el que dicha información es revelada, el presente análisis se realizará desde dos perspectivas distintas: revelar información al mercado en general y compartir información con socios comerciales. En el primer capítulo exploramos como la propensión a revelar información al mercado es influenciada por la forma en que otras organizaciones han revelado información en el pasado. De esta forma, nuestros resultados muestran que las firmas imitan a otras empresas el mismo hecho de revelar la información independientemente del contenido, pero en función de dos factores: la incertidumbre y la lucha por mantener su posición competitiva en el mercado. Además, la segunda razón parece ser dominante. En el segundo capítulo, se analiza el flujo interno de información durante negociaciones entre socios comerciales. Específicamente exploramos como las penalizaciones por acuerdos tardíos modifican la usualmente asumida relación negativa entre el poder de negociación de los socios comerciales y su disposición a compartir información. Nuestros resultados soportan la idea de que la interacción entre las penalizaciones por acuerdos tardíos y el poder de negociación de los socios comerciales genera incentivos que son capaces de disminuir, al menos en cierto grado, el efecto negativo del poder de negociación sobre la disposición a dar información.

ABSTRACT

The global motivation for this work is the identification and analysis of unexplored factors driving firm's voluntary disclosure of strategic information. Since the motivation and consequences of disclosing information change according to the disclosure environment, we conduct our analysis from two different perspectives: disclosing information to markets and sharing information internally with commercial partners. In the first essay we explore how firms' propensity to disclose information to the market is influenced by the previous disclosing behavior of other players in the market. Our results show that firms imitate their peers both to deal with uncertainty as well as for competitive reasons. Nevertheless, however, the second reason tends to be dominant. In the second essay, we analyze the internal information flow during negotiations between commercial partners. Specifically, we explore how penalties for delay influence the usually found negative relation between traders' bargaining power and their willingness to share accounting information during negotiations. Our results support our main thesis, and we conclude that the interaction between the penalizations for delay and the bargaining power are able to create, at least to some extent, incentives to diminish the negative effects of bargaining power over information sharing.

Introduction

This work is presented by Mr. Gilberto Márquez Illescas as part of the requirements to obtain the PhD degree in Business Economics and Quantitative Methods at the Business Department of the Universidad Carlos III de Madrid. It was conducted under the supervision of the Professors Dr. Susana Gago Rodríguez and Dr. Manuel Núñez Nickel.

The global motivation for this work is the identification and analysis of unexplored factors driving firm's voluntary disclosure of strategic information. Disclosing information involves a trade-off which positive and negative effects for disclosing firms will depend on the disclosure context. When information is disclosed directly to markets, firms revealing information send a positive signal and differentiate from competitors, however, rival organizations could use this information to compete more aggressively. On the contrary, when information is shared internally with commercial partners (i.e. supply chain partners), the pros and cons of sharing information are different. On one hand, sharing information is likely to enhance the overall coordination and performance of the supply chain, but at the same time, sharing this information is likely to deteriorate the bargaining power of disclosers. According to these notions, even when the revelation of strategic information is important both at the market and individual firm level, the decision of individual firms of revealing information is not straightforward. In this work, we analyze two factors pushing firms to disclose in different contexts. In a market context, we use an archival methodology to explore how the disclosure actions of peers affect the firm's voluntary disclosure and on an internal context (supply chain context) we use an experimental approach to analyze how

the existence of penalties due to late agreements affect firm's propensity to share information with commercial partners.

In the first chapter, we analyze how the disclosing behavior of organizations is influenced by the previous disclosing behavior of other players in the market. To do this, we use a double-driver theoretical approach in order to disentangle two main drivers of imitation: uncertainty and competition. The empirical approach of this first chapter is archival, using as an empirical setting the Spanish newspaper industry from 1966 to 1992. We provide evidence that imitation may arise regardless if the content of the information disclosed represent good or bad news to the disclosing firm. Our results show that even when mimic patterns are used by firms both, as a mechanism to deal with uncertainty and as a tool to compete in the market, the second effect tends to be dominant. These findings provide a new insight regarding the disclosure of information. For instance, if a regulator pretends to incentive the voluntary disclosure, the actions needed may be different depending on the level of competition. If competition is strong, it may suffice to motivate one firm in order to generate a positive disclosure trend in the industry. On the contrary, if competition is very low, a regulator may try to motivate a market leader (a highly informed organization) to disclose in order to generate a positive effect in the industry.

In the second chapter, we analyze how firms' willingness to share information is affected by their bargaining power when a negotiation between commercial partners takes place in a setting where penalties for late agreements are positive. We claim that these penalties for delay interact with the bargaining power in order to generate impatience in most powerful traders, increasing their willingness to share information. To test this notion we conducted

an experiment with undergraduate students from a large Spanish University. We provide evidence that, at some extent, in bargaining settings where time is valuable for traders, most powerful buyers are likely to show a higher willingness to share information. The implications of this finding is that when supply chain partners need to coordinate is that more powerful partners are likely to show a more cooperative bargaining approach in supply chains competing in more disputed or dynamic markets, in other words, where the benefits of cooperation would be higher.

CHAPTER I

EXPERTS OR RIVALS: MIMICRY AND VOLUNTARY DISCLOSURE[1]

ABSTRACT

We explore how the disclosing behavior of a particular firm is influenced by the previous disclosing behavior of other players in the market. Regardless of the content of the information, we analyze the relative importance of two different motivations to imitate: uncertainty and competition. We disentangle these two possibilities, identifying their relative influence on the disclosing behavior of firms in the newspaper industry in Spain during the period 1966-1993. Our results show that uncertainty pushes firms to follow the actions of more informed organizations. Nevertheless, this effect loses relevance as competition is considered. Based on these results, we conclude that mimic patterns are used by firms both, as a mechanism to deal with uncertainty and as a tool to compete in the market.

Keywords: Disclosure, Imitation, uncertainty, competition, newspapers.

[1] This article is co-authored by Dr. Manuel Cano Rodríguez. In the same vein, we thank participants and referees of the 2013 Raymond Konopka Annual Workshop in Management Accounting and Accounting History, Internal Seminar Series of Universidad Carlos III de Madrid, the 2013 European Accounting Association Annual Conference and the 2013 American Accounting Association Annual Conference for their helpful comments.

I. INTRODUCTION

Voluntary disclosure promotes an efficient market's allocation of resources by diminishing the information asymmetries between firms and stakeholders (Healy and Palepu 2001). This aspect makes the study of any unexplored factor driving firm's voluntary disclosure to be relevant. In this work, we propose that imitation is likely to be considered among these factors. That is, we explore the existence of behavioral patterns where firms disclose non-financial information mainly because other firms of reference have done it before.

The influence of other organizations' past actions on firm's disclosure of non-financial information is a topic that has been scarcely reviewed by empirical accounting literature. To our knowledge, only three papers deal directly with this issue, all of them focused on financial information. Following the economic theories of herding, Brown, Gordon and Wermers (2006) provide evidence of intra-industry herding behavior in CAPEX disclosures. In the same manner, Tse and Tucker (2009) find that the disclosure of negative income warnings is influenced by the disclosure behavior of other peer firms in the market. On the other hand, Aerts, Cormier and Magnan (2005) depart from this economic perspective and test the existence of mimetic patterns on disclosure of corporate environmental expenses following an institutional approach, in which imitation is motivated exclusively by social legitimacy reasons. In other words, they explore a sort of status-seeking imitation. Three additional papers provide complementary evidence about the role of imitation on firms' disclosure decisions. Botosan and Harris (2000) include the mimetic behavior as a control variable when testing the influence of competition of firm's disclosure behavior. In a similar manner, Houston, Lev and Tucker (2006) uses imitation as

a control variable in order to analyze the factors behind earnings guidance. Finally, Lu and Tucker (2012) incorporate mimetic behavior as a control variable in their model to test the relation between earnings management and the revelation of non-financial information (strategic plans). This last paper is the only one considering the imitation of non-financial disclosures. However, the imitation of non-financial disclosures is not supported by the empirical findings. Given the secondary role of imitation in these last three papers, the authors do not provide further theoretical explanations for this effect. The rest of accounting papers developing the imitation branch of accounting literature, do not analyze the imitation among firms in the industry, but the herding behavior among other agents in the market (such as securities traders and advisers) that arise after the voluntary disclosure performed by firms (e.g. Arya, Glover, Mittendorf and Narayanamoorthy 2005; Arya and Mittendorf 2005; Dye and Sridhar 1995; Mensah and Yang 2008).

In this work, we extend Brown et al. (2006), Aerts et al. (2005) and Tse and Tucker (200), analyzing the influence that previous disclosures of reference firms have on the current voluntary disclosure of a particular firm. However, three differences may be remarked. Firstly, our work explores the imitation of the action of disclosure, regardless of whether the content of the information represent good or bad news for the firms. Secondly, and more important, instead of using a single theoretical perspective (either economic or organizational) we use a double factor approach based on a recent framework provided by Lieberman and Asaba (2006). We do not test the mere existence of an imitation pattern in disclosure but we analyze and test the relative importance of two different factors motivating firms' imitation: the firm's specific disclosure uncertainty (e.g. Dimaggio and Powell 1983; Bikhchandani, Hirshleifer and Welch 1992; Bikhchandani Hirshleifer and

Welch 1998; Henisz and Delios 2001) and its competitive environment (e.g. Chen and McMillan 1992; Knickerbocker 1973). Thirdly, we conduct our work using of non-financial information.

The distinction between the two mentioned drivers of imitation is important because it would determine what organizations will be used as role model. In the case of uncertainty, firms will replicate the actions of other organizations perceived to be more experienced. We refer to this first type of imitation as Experience-based. On the contrary, when imitation is driven by competition, firms may find optimal to follow the actions of their closer rivals in order to maintain their relative competitive position in the market. We refer to this second type of imitation as Rivalry-based. The existence and magnitude of these two effects will clarify what the overall firm's motivation to mimic what other organizations have previously done in terms of disclosure is.

We empirically test these ideas using a panel data logit model to estimate the probability of voluntary disclosure as a function of the previous disclosure behavior (in relation to the same items) of expert and rival organizations operating in the same sector. We used as empirical setting the newspaper industry in Spain over the period 1966-1993, examining specifically the firms' decision of disclosing (or not) the number of newspapers sold (circulation figure). Within this industry, this figure is considered as strategic information for the organizations since its divulgation may have two potential (and opposed) implications on firm's performance. Firstly, it significantly affects the firm´s operating income by signaling the clients the quality of the newspapers. Secondly, rivals can use this information in order to replicate the successful features of the disclosing firm.

The main contribution of this work relies on its double factor approach for explaining the firm's motivations to imitate other agent's disclosure actions, regardless of the "sign" of the information. The use of this framework allows us to show empirically that the imitation of non-financial information disclosure actions may be driven not only by uncertainty (as assumed by most of herding accounting literature) but also by competitive reasons. Moreover, we are also able to disentangle the relative importance of these two drivers. This approach has not been used to analyze the mimicry of disclosure patterns. Our work then, not just identify imitation as a driver of disclosure, but it offers both theoretically and empirically an explanation of the reasons behind firms' decisions to follow the behavior of other organizations. As a secondary contribution, we provide some empirical evidence of imitation of non-financial disclosures.

The paper is structured in the following way. In the next section, we explain in detail the concepts of Experience-based and Rivalry-based imitation effects and formulate a set of hypotheses for further testing. The third section explains the methodology, sample and variables used in order to perform the empirical testing. Section four describes the results and the final section includes some conclusions and directions for future research.

II. THEORY AND HYPOTHESES

Expertise-based imitation

When the outcomes of an action are not clear, firms may find optimal to mimic the disclosure behavior of other agents that they perceive as better informed or "expert" organizations (Lieberman and Asaba 2006). Traditionally, it is considered that disclosing

firms differentiate themselves from closer rival firms since they transmit a positive signal to its clients. This positive signal is expected to have an upward effect on profits (Grossman 1981; Milgrom 1981). On the other hand, simultaneously to this positive effect, disclosure may also represent a threat for the revealing firm's performance since rivals could use this information to compete more aggressively (Verrechia 1983). Hence, from an elementary perspective, a firm's voluntary decision of revealing strategic information to the market might depend on the firm's capacity to estimate the net outcome of these two contrary effects. If agents were in possession of the necessary elements to accurately estimate the relative strength of these two effects, then, firm's disclosure decisions would be totally autonomous. However, if this was not the case, firms could need to rely on alternative mechanisms to select the best course of action for the organization. One of these mechanisms is looking at the disclosure behavior of other agents in the market perceived as having better information regarding the potential consequences of revealing information. It is important to remark that in this work we do not focus in situations where information's positive effect is linked to the delivery of good news, or in situations where imitation comes from the firm's opportunistic behavior of jumping into a bandwagon of "bad-news" disclosures. In other words, we do not study an imitation effect triggered by the sign of the information, but to the action of disclosing per se. For instance, regardless of the content of the information, firms may obtain benefits from disclosing if this action is seen by customers as a signal of the firm's credibility.

More interesting perhaps, is the notion that the mechanism modeling firms' perception of other players' superior expertise is not unique. A firm can be perceived as having superior expertise, for instance, as indicated by the herding and information cascades research,

because it has more experience in the market or because it is considered a sort of fashion leader that have been already followed by other organizations (Bikhchandani et al. 1992; Bikhchandani et al. 1998). Alternatively, this higher status may come from institutional factors such as size or salient performance (Haunschild and Miner 1997; Haveman, 1993) or even industry legitimation (DiMaggio and Powell 1983). For the purposes of this work, we consider two specific factors that confer firms a high expertise status in revealing information: size and age. Larger firms have more resources that allow them to take more "informed" decisions (e.g. Gimeno, Hoskisson, Beal and Wan 2005). Older firms are more likely to know the market and evaluate in a better way the consequences of disclosure. Then, if an Expertise-based imitation prevails on a given setting, the number of large (old) firms revealing information to the market in the past must be positively related with the adoption of this same practice by any given individual firm at present time. It is noteworthy that this reasoning implies that if a firm with high experience at disclosing actually did so in previous periods, then disclosing is likely to be considered as a practice with positive (or at least not negative) outcomes for the firms. Otherwise, expert firms would not be disclosing anymore. These notions lead to the following hypothesis:

> *Hypothesis 1 (H1): The number of large (old) firms revealing information in the past exerts an increment on the probability that an individual firm has the same behavior in the present.*

On the other hand, as the uncertainty associated with the potential consequences of disclosing information becomes higher, an organization's capability to make autonomous decisions decreases, and hence, its incentives to mimic the actions of expert players (which

are supposed to elaborate more accurate assessments given their experience) rises up. Hence, in settings where an Expertise-based imitation effect is observed, this effect should be more salient as the degree of this specific type of uncertainty faced by firms gets higher. Based on this argument, we propose the following hypothesis:

> *Hypothesis 2 (H2): The specific uncertainty faced by firms strengthens the effect of an Expertise-based imitation pattern over the probability of voluntary disclosure.*

Rivalry-Based Imitation

Another possibility, regardless of the factor mentioned above, is that rival organizations imitate the disclosure behavior of each other in order to maintain their relative competitive position in the market (Lieberman and Asaba 2006). When the action of revealing information, per se, provides firms with competitive advantage, firms may perceive rival organizations' disclosures as a threat for their competitive position and, in order to neutralize this menace, firms may follow their competitors' actions and disclose too. In such situation, following rivals' actions act as a mechanism for keeping a firm's market relative competitive position constant (Knickerbocker 1973). In the same sense, if most of firms decide to disclose, the possibility to face a non-disclosing firm decreases and a kind of tacit collusion regarding the revelation of information is likely to appear (Porter 1979). As an example, one might think about a company identifying the best option for its marketing campaign in written media. In order to decide what publication is more convenient for its purposes, this firm needs to have quantitative and qualitative information about the audience of newspapers, magazines, etc. Each firm in this industry can proportionate its own figures but due to the existence of information asymmetries, this information is unlikely to be considered as reliable (media

firms have important incentives to deceive) for optimal decision making. In such a context, a firm able to show credible (e.g. audited) information about its audience is likely to have a competitive advantage due to a rise on its credibility (independently of whether the information is good or bad). The theory behind the Rivalry-Based imitation effect suggests that, in order to avoid a change in their relative competitive position, rival firms will disclose similar information in order to keep their status quo in the market.

In other words, disclosure may help organizations to preserve their relative competitive position and stabilize the competitive environment by neutralizing the effects of the disclosure actions performed by rival firms. These ideas indicate that firms might not disclose following up what they consider as "expert players" but they also might disclose if their direct competitors do so. Different from the Expertise-based imitation where imitation is based on a specific feature of the firms disclosing information (experience or size), Rivalry-based imitation is then, based on the mere existence of rival firms revealing information. According to these previous concepts, if Rivalry-based imitation prevails on a given setting, the existence competitors disclosing information in the past should have a positive influence the adoption of this practice by a given individual firm in the present. These notions allow us to formulate the next hypothesis:

> *Hypothesis 3 (H3): The number of prior competitors disclosing information exerts an increment on the probability that an individual firm shows the same behavior in the present.*

Since, as mentioned above, Rivalry-based imitation is used by organizations as a tool to deal with competition (Semadeni and Anderson 2010), the strength of this type of imitation

effect is likely to vary according with the level of competition faced by the firms. If the competition faced by firms is low, firms have low incentives to imitate because the actions of their rivals do not represent a threat for its status quo. On the contrary, when the market is highly competitive, not following the actions of the competitors may induce high changes in the status quo of the firms. In other words, if a Rivalry-based imitation effect exists in a given setting, the intensity of this effect should be higher as the competition in the market intensifies. These arguments motivate the following hypothesis:

Hypothesis 4 (H4): The intensity of competition increases the effect of a Rivalry-based imitation pattern over the probability of voluntary disclosure.

III. METHODOLOGY

Research setting

We empirically test our set of hypotheses using as empirical setting the newspaper industry in Spain during the period 1966-1993. We consider important to highlight two advantages of using this specific empirical setting for testing voluntary disclosure issues. First, firms reveal the circulation number through a government agency known as OJD (Oficina de Justificación de la Difusión) and this organism is the only voluntary and verifiable mechanism used by the organizations in the Spanish Newspaper industry to release circulation figures[2]. Hence, for empirical purposes the figures are "audited" and as such, the empirical results obtained from this data are reasonably isolated from noisy issues derived

[2] OJD charges a fee (% of sales) to newspapers in order to certify and publish their information. Given the amount of this fee, we consider that it does not influence the firm's decision of disclosing information.

from information asymmetries among clients and newspapers (e.g. cheap talking)[3]. Second, the data is free from the effects of stock market and mandatory disclosure since during the whole analyzed period, on one hand, all the firms in the sample were privately owned and on the other, firms were not obligated to disclose this information neither by law nor by any government institution. Regarding the time span, it was strategically chosen in order to cover since the year in which the OJD was founded (1966) till the last year in which all firms were privately owned (1992).

In this empirical setting, two different types of firms coexist. On one hand, there is a group of small newspapers whose coverage is local and faces very low direct competition. We refer to these organizations as Local newspapers. On the other hand, there is a group of large newspapers which circulation covers the whole Spanish market. Different from the Local newspapers, these organizations directly compete against each other. Given its larger geographical area of influence and resources, these newspapers are the natural leaders in the market. We refer to this type of firms as National newspapers.

Within this setting, we specifically analyze the firm's decision of whether or not disclosing the information of the number of daily issues sold (or daily circulation figure). In the newspaper industry, the divulgation of this figure is considered a highly strategic decision due to its potential implications on performance. On one hand, the circulation figure indicates the quality of the organizations to their potential advertising customers in terms of transparency and diffusion and as a result, it potentially affects a substantial portion of the firm's income[4]. In other words, the circulation figure of a newspaper is closed linked with

[3] This feature is important because voluntary disclosure mitigates the misallocation of resources in the markets as long as it is credible (Healy and Palepu 2001).
[4] Which accounts for around 80% of the industry's income (Kirchhoff 2009).

the audience that it can reach, and hence, this figure determines the newspaper attractiveness to the eyes of advertising customers[5]. On the other hand, by revealing this figure, an organization is directly providing its competitors with an input to estimate its dimension, revenues and cost functions, as well as highlighting its competitive advantages, which may intensify the competition in the industry if rival firms take advantage of it.

Data

The collected data includes information of 227 firms (15 National and 212 Local) during the period 1966-1993 and indicates, on a quarterly basis, whether the firm i disclosed or not its circulation figure to the OJD. The database also includes qualitative information of the firms such as their geographic location, coverage (if regional or national), year of foundation, etc. The data describing the newspapers' disclosure behavior was obtained directly from the OJD records. The rest of the information was calculated based on the records from the Registry of Journalistic Firms and the General Mass Media Guide. To perform our analysis we eliminated from the database the observations belonging to specific content newspapers (sports, social, etc.) since this type of organizations in most cases do not have direct competitors on their relevant markets, which impedes to test for a Rivalry-based imitation effect. After this deletion, our final sample contained 868 quarter-firm observations for National newspapers and 11,494 quarter-firm observations for Local newspapers.

[5] In addition, given the time span chosen, there is no influence of on-line advertising that potentially could significantly diminish the influence of the circulation figure on income generation.

Model Specification

In order to test our hypotheses, we ran two different sets of models, one for each type of firms. For Local newspapers we do test only the Expetise-based imitation effect since the competition among this type of firms is insignificant. On the contrary, in the case of National Newspapers, we test both imitation effects simultaneously.

All models follow a fixed effects panel data logit[6] specification as depicted in Equation 1.

$$\pi(x_{it}) = p(y_{it} = 1|x_{it}) = \frac{\exp(x'_{it}\beta)}{1+\exp(x'_{it}\beta)} \quad (1)$$

In Equation 1, $\pi(x_{it})$ accounts for the probability to observe the firm *i* disclosing information at time *t* as a function of a set of covariates x_{it} that contains three groups of variables: (1) variables measuring our two theoretical imitation effects, (2) the drivers of imitation (uncertainty and intensity of competition) and (3) variables controlling for newspapers' propensity to disclose.

Variables

Variables measuring imitation effects

In the case of Local Newspapers, we use two variables to measure the Expertise-based Imitation Effect. The variable *LExpertiseSize* accounts for the number of national newspapers disclosing information in the period *t-1*. In a similar fashion, we define the

[6] In order to ensure that the chosen econometric methodology matches our empirical setting, we conducted a Hausman test (StataCorp 2011). The results indicate that it is safe to use a fixed-effects model.

variable *LExpertiseAge* as the number of local newspapers older than 50 years disclosing information in the period *t-1*.

On the other hand, in the case of National newspapers, the Experience-based imitation is measure only through the variable *NExpertiseAge*, which accounts for the number of national newspapers older than 50 years disclosing information in the period *t-1*[7]. We do not include a variable measuring the expertise of Local newspapers since larger firms are unlikely to imitate smaller firms (Gilbert and Lieberman 1987). In a similar fashion, we test the Rivalry-Based Imitation effect (H3) with the variable *NRivalry,* which measures the number of national newspapers disclosing information in the period *t-1*.

Variables measuring drivers of imitation

In accordance with the theoretical notions presented, we use the uncertainty about the consequences of disclosing information as a driver of imitation. Firms new to a certain action are unlikely to have a stock of knowledge to evaluate the consequences of that action (Henisz and Delios 2001). According to these ideas, the more experience a firm has in disclosing information, the more its understanding of the benefits and costs of doing so, and therefore, the more its expertise and the less uncertainty it will perceive about the outcomes linked to revealing information. With this in mind, we define the variable *Uncertainty* for the firm *i* at time *t*, as the negative of the total number of periods in which it has released information from time *t=0* to time *t-1*[8]. In this way, if a newspaper has never released

[7] We checked the robustness of the results obtained for the Expertise-Based Imitation using different time thresholds (i.e. 5, 10, 20, 30 and 40 years) for the variables *LExpertiseAge* and *NExpetiseAge*. We did not find any significant change in our results neither for Local or National newspapers.

[8] For newspapers founded after 1966, t=0 indicates the firm's foundation date while for firms founded before 1966, this variable includes all their accumulative disclosures from 1966 to time *t-1*. Given that our database

information in the past (maximum uncertainty), the variable would take a value of cero. As the disclosing history of a firm increases, the value of the variable will decrease indicating that the uncertainty faced by that firm is smaller. In addition to this specific uncertainty measure, we use the variable *Age* as a measure of the general uncertainty of firms. Older firms are expected to know more about the market and hence, have a lower uncertainty. We used these two variables in a cross product with the Expertise-based imitation variables in the models of Local and National newspapers to test H2.

On the other hand, we calculated the variable *Market Concentration* in order to approximate the notion of intensity of competition. This measure is a concentration index calculated at period *t* as the logarithm of the total number of potential readers (older than 16) in Spain at time *t* divided by the total number of National newspapers established at the same period *t*. This measure provides an idea of the market concentration at any time *t*. Higher (lower) values of this variable indicate higher (lower) market concentration and hence, lower (higher) intensity of competition. We used this measure as a cross product with *NRivalry* to test H4.

Variables controlling for newspapers' propensity to disclose

We included control variables potentially related with the firm's natural propensity of disclosure. These variables are common to all models. Firstly, we controlled for the firm's disclosure behavior in previous period (period *t-1*) by including a variable called *Inertia.* This measure accounts for the possibility that firms just do what they did in the previous period instead of imitating the behavior of other agents. In the same vein, in order to control

contains all the information published by the OJD since the beginning of its operations (1966), we have all the disclosing history for these firms.

for the general state of the economy, we included the variable *LogGNP*, which accounts for the logarithm of the Spanish Gross National Product (in billions of pesetas). Firm's performance is other factor that could modulate the disclosing behavior since it works as a signaling mechanism where firms with relatively good news disclose while other forms do not (e.g. Miller 2002). We used a survival model to approximate this concept by the hazard rate of failure (risk of bankruptcy) for every firm-period. Using these calculations, we created the variable *Performance*, which accounts for the yearly average hazard rate measure for each firm. Likewise, we included the variable *Subsidy* in order to control for the introduction of a subsidy based on diffusion that could modify the firm's incentives to disclose information through the OJD. Since this subsidy started to work in 1984, we gave this variable the value of 0 for the observations corresponding to periods before 1984, and 1 for the periods after the introduction of the subsidy. Finally, looking forward to control for variations in disclosure coming from the change in the political-market conditions we included the variable *Dictatorship*, which takes a value of one and zero for observations before and after the dictatorship period in Spain, respectively.

IV. EMPIRICAL RESULTS

Descriptive Statistics

Table 1 displays means, standard deviations and range of the main variables described in the previous section. Panel A refers to National newspapers while Panel B provides the statistics related with Local newspapers. Panel A shows that the average number of rival organizations (*NRivalry*) disclosing information is slightly higher than six. From these

competitors, in average, only two were considered as "old" according with our definition (*NExpetiseAge*). On the other hand, the range of the firms' disclosing experience (*Uncertainty*) is large, going from newspapers with a high experience (105 periods) to organizations for which disclosing information is totally a new practice. In average, firms have a disclosing experience of 38 periods. In the same manner, the data includes both, recently founded and very old newspapers (*Age*). Regarding the competition (*Market Concentration*), it goes from a minimum of 0.98 to a maximum of 1.68, which indicates that during some periods the competition was more intense than in others.

Panel B shows the statistic summary of Local newspapers. This type of firms observed an average of 7 National firms (*LExpertiseSize*) and 26 Local organizations considered as old (*LExpertiseAge*) disclosing information on each period. On the other hand, the specific uncertainty faced by Local firms (*Uncertainty*), in average seems to be higher than in the case of National newspapers. Similarly, according to the average age (*Age*), Local organizations are younger than National firms. This might indicate that in average, National firms are more experienced in disclosing information and have a deeper knowledge of the market than Local firms. This fact may suggest that National organizations may have a superior performance and a lower bankruptcy probability. In this regard, the variable *Performance* indicates that in fact, the performance of National newspapers is slightly better than the one of Local firms. Finally, the disclosing inertia (*Inertia*) seems to be higher in the case of National newspapers.

TABLE 1

Descriptive Statistics

PANEL A: National Newspapers

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
National Rivalry	868	6.18	1.60	0.00	9.00
National Expertise Age	868	2.85	0.84	0.00	5.00
Uncertainty	868	-38.56	29.29	-105.00	0.00
Age	868	51.67	32.02	0.00	112.83
Market Concentration	868	1.25	0.19	0.98	1.68
Inertia	860	0.87	0.34	0.00	1.00
LogGNP	868	10.51	0.23	9.99	10.85
Performance	868	0.03	0.08	0.00	0.73
Subsidy	868	0.28	0.45	0.00	1.00
Dictatorship	868	0.39	0.49	0.00	1.00

PANEL B: local Newspapers

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
National Expertise Size	11494	6.93	1.67	0.00	10.00
Local Expertise Age	11494	26.39	9.21	0.00	45.00
Uncertainty	11494	-19.68	27.88	-109.00	0.00
Age	11494	46.76	35.16	0.00	191.66
Inertia	11375	0.47	0.50	0.00	1.00
LogGNP	11494	10.51	0.24	9.99	10.85
Performance	11494	0.03	0.07	0.00	0.94
Subsidy	11494	0.32	0.47	0.00	1.00
Dictatorship	11494	0.40	0.49	0.00	1.00

Table 1 presents means, standard deviations, minimums and maximums. Panel A shows these statistics for National newspapers and Panel B for Local newspapers. *National Rivalry* for any national firm *i* is the number of rival national newspapers (different from *i*) disclosing information in the period t-1. *National Expertise Age* for any national firm *i* is the number of national firms older than 50 years (different from *i*) disclosing information a time t-1. *National Expertise Size* for any local firm *i* is the number of national firms older than 50 years disclosing information a time t-1. *Local Expertise Age* for any local firm *i* is the number of local firms older than 50 years (different from *i*) disclosing information a time t-1. *Uncertainty* is the negative of the accummulated number of disclosing periods of firm *i* from time t=0 to to time t-1. *Age* is the number of years that firms have been in the market. *Market Concentration* is the logarithm of the number of potential readers in Spain at time t divided by the number of national firms in the market at time t. *DisInertia* is a dummy variable with a value of 1 if firm *i* disclosed at time t-1 and 0 otherwise. *LogGNP* is the logarithm of the gross national product in Spain at time t. *Performance* is the yearly average hazard rate (i.e. prob. of bankruptcy) measure for firm t. *Subsidy* is a dummy variable with a value of 1 if time t occurs after 1984 and 0 otherwise. *Dictatorship* is a dummy variable with a value of 1 if time t occurs after the dictatorship period in Spain and 0 otherwise.

Table 2 depicts the pairwise correlation coefficients (Pearson and Spearman) among the set of variables defined in the previous section. Panel A shows the correlations corresponding to the National newspapers group. There is a high correlation between the variable *Uncer* and the variables *Age* (-0.50) and *Market Concentration (-0.56)*. In the former case, the correlation indicates that older firms tend to release more information. This result suggests that older firms have a better understanding of the market and perhaps associate disclosure

with positive outcomes. In the latter case, lower values of the variable *Market Concentration* indicate a more competitive market, for example, due to an increase in the number of competitors. If that was the case, since new competitors are likely to have null or low experience disclosing information, the variable *Uncertainty* is likely to increase in average. Regarding the Local newspapers (Panel B), there is a high negative correlation between the variables *Inertia* and *Uncertainty (0.67)*. This correlation indicates that firms having a high inertia in disclosing information tend to disclose more often, leading to an increase in the variable *Uncertainty.* On the other hand, both for the case of National and Local newspapers, the control variables *LogGNP* and *Subsidy* are correlated with some main explanatory variables such as *NExpertiseAge, LExpertiseAge* and *Uncertainty*. We do not provide a deep explanation for these correlations since even when their magnitude is potentially high enough to introduce some estimation problems, as we will show in further sections, the inclusion or exclusion of these variables from the models do not modify our empirical results.

TABLE 2

Pearson (Spearman) Correlations Below (Above) the Diagonal of the Matrix

PANEL A: National Newspapers

	1	2	3	4	5	6	7	8	9	10
1 *National Rivalry*		0.1721	0.0881	-0.0643	-0.5662	0.0959	-0.1742	0.0408	-0.5505	-0.1115
2 *National Expertise Age*	0.4425		-0.1543	-0.3035	0.3813	-0.0279	0.4709	0.2732	0.296	-0.3663
3 *Uncertainty*	0.0258	-0.1708		-0.506	-0.5246	-0.2664	-0.7052	0.0871	-0.4912	0.6239
4 *Age*	-0.0574	-0.2956	-0.5048		0.1357	0.134	0.0323	-0.3594	0.0321	-0.0052
5 *Market Concentration*	-0.378	0.3777	-0.562	0.1146		0.0917	0.6082	0.0388	0.6618	-0.3068
6 *Inertia*	0.2591	0.0981	-0.2153	0.1327	0.1068		0.0256	-0.4014	-0.0498	-0.0149
7 *LogGNP*	0.1017	0.5685	-0.6994	-0.0007	0.5784	0.0971		0.2759	0.7787	-0.8461
8 *Performance*	-0.0379	0.0882	0.0745	-0.1607	0.0389	-0.5109	0.1304		0.1951	-0.351
9 *Subsidy*	-0.3441	0.2736	-0.5548	0.0125	0.7153	-0.0498	0.729	0.2023		-0.5023
10 *Dictatorship*	-0.1934	-0.3835	0.6186	0.0313	-0.3402	-0.0149	-0.7735	-0.1399	-0.5023	

PANEL B: Local Newspapers

	1	2	3	4	5	6	7	8	9
1 *National Expertise Size*		-0.2054	0.0459	0.09	-0.0047	-0.203	-0.0667	-0.5676	-0.0384
2 *Local Expertise Age*	-0.0035		-0.3222	-0.0848	0.1751	0.9793	0.1709	0.7868	-0.8122
3 *Uncertainty*	0.0069	-0.3843		-0.3789	-0.8672	-0.386	0.6353	-0.2955	0.3499
4 *Age*	0.0574	-0.0859	-0.3827		0.2906	-0.0446	-0.3703	-0.0859	0.0135
5 *Inertia*	0.0564	0.1764	-0.6726	0.2675		0.2413	-0.7374	0.1715	-0.2244
6 *LogGNP*	0.1164	0.9138	-0.432	-0.0268	0.2391		0.1092	0.8036	-0.8508
7 *Performance*	-0.0428	0.1954	0.2535	-0.2947	-0.3914	0.1568		0.0995	-0.1058
8 *Subsidy*	-0.3023	0.8163	-0.3727	-0.073	0.1715	0.7539	0.1557		-0.5579
9 *Dictatorship*	-0.1555	-0.7169	0.3935	0.0115	-0.2244	-0.788	-0.1619	-0.5579	

Table 2 presents the Pearson (Spearman) Correlations above (below) the diagonal of the matrix. For Panel A: Correlations $\geq|.05|$ significant at 5%. For Panel B: Correlations $\geq|.03|$ significant at 5%. *National Rivalry* for any national firm *i* is the number of rival national newspapers (different from *i*) disclosing information in the period t-1. *National Expertise Age* for any national firm *i* is the number of national firms older than 50 years (different from *i*) disclosing information a time t-1. *National Expertise Size* for any local firm *i* is the number of national firms older than 50 years disclosing information a time t-1. *Local Expertise Age* for any local firm *i* is the number of local firms older than 50 years (different from *i*) disclosing information a time t-1. *Uncertainty* is the negative of the accummulated number of disclosing periods of firm *i* from time t=0 to to time t-1. *Age* is the number of years that firms have been in the market. *Market Concentration* is the logarithm of the number of potential readers in Spain at time t divided by the number of national firms in the market at time t. *DisInertia* is a dummy variable with a value of 1 if firm *i* disclosed at time t-1 and 0 otherwise. *LogGNP* is the logarithm of the gross national product in Spain at time t. *Performance* is the yearly average hazard rate (i.e. prob. of bankruptcy) measure for firm t. *Subsidy* is a dummy variable with a value of 1 if time t occurs after 1984 and 0 otherwise. *Dictatorship* is a dummy variable with a value of 1 if time t occurs after the dictatorship period in spain and 0 otherwise.

Empirical Testing

Table 3 depicts, for each type of newspapers, a summary of the way in which we conducted the empirical testing of the hypotheses developed in Section 2. Hypotheses 1 and 3 were tested with the direct effects of the main imitation variables (*LExpertiseAge*, *LExpertiseSize*, *NExpertiseAge* and *NRivalry*) and Hypotheses 2 y 4 with the interactions terms between these variables and their correspondent imitation drivers (*Uncertainty, Age* and *Market Concentration)*.

TABLE 3

Expected empirical result for the hypotheses

PANEL A: National Newspapers

Variable	Hypothesis	Table	Model	Expected Sign
National Expertise Age	H1	4	2-5 , 8	+
National Expertise Age x Uncertainty	H2	4	3 , 5 , 8	+
National Expertise Age x Age	H2	4	4-5 , 8	-
National Rivalry	H3	4	6-8	+
National Rivalry x Market Concentration	H4	4	7-8	-

PANEL B: Local Newspapers

Variable	Hypothesis	Table	Model	Expected Sign
National Expertise Size	H1	5	2-5 , 10-13	+
National Expertise Size x Uncertainty	H2	5	3 , 5 , 11 , 13	+
National Expertise Size x Age	H2	5	4-5 , 12-13	-
Local Expertise Age	H1	5	6 -9 , 10-13	+
Local Expertise Age x Uncertainty	H2	5	7 , 9 , 11 , 13	+
Local Expertise Age x Age	H2	5	8-9 , 12-13	-

Table 3 presents the main variables used for the empirical testing of the hypotheses of the model. Panel A shows the hypotheses testing for National newspapers. Panel B shows the hypothesis testing for Local newspapers. The first column indicates the description of the variable. The second, third and fourth columns link the hypothesis , number of model and expected sign corresponding to the empirical test of each hypotheses. *National Rivalry* for any national firm *i* is the number of rival national newspapers (different from *i*) disclosing information in the period t-1. *National Expertise Age* for any national firm *i* is the number of national firms older than 50 years (different from i) disclosing information a time t-1. *National Expertise Size* for any local firm *i* is the number of national firms older than 50 years disclosing information a time t-1. *Local Expertise Age* for any local firm *i* is the number of local firms older than 50 years (different from *i* disclosing information a time t-1. *Uncertainty* is the negative of the accummulated number of disclosing periods of firm *i* from time t=0 to to time t-1. *Age* is the number of years that firms have been in the market. *Market Concentration* is the logarithm of the number of potential readers in Spain at time t divided by the number of national firms in the market at time t.

Table 4 shows the results of a group of regressions corresponding to National newspapers. Model 1 shows the impact of the control variables on their own. H1 is tested using the variable *NExpertiseAge* and H2 by the interaction between *NExpertiseAge* and our two uncertainty measures (*Uncertainty* and *Age)*. As shown in all models, there is no individual effect of the number of National firms older than 50 years disclosing information in the previous period (*LEpertiseAge)* on the current probability of disclosure of National newspapers. Hence, we do not find support for H1 in this case. Nevertheless, a joined Expertise-based imitation effect appears with a p-value < 0.1 when both specific

uncertainty measures (*Uncertainty* and *age*) are considered independently. This result indicate that firms propensity to imitate the actions of expert players increases as the firms are less familiar with disclosing information, or in other terms, as they face more uncertainty. This same result is clearer when we simultaneously analyze both effects in the Model 5. This model shows the direct effect of the variable *NExpertiseAge* as well as its interactions with the variables *Uncer* and *Age* altogether. In this way, when the effect of the specific uncertainty on the imitation effect is considered, both interaction terms between *LEpertiseAge* and *Age and Uncer respectively* are positive and significant (P-value<0.05). These results indicate that when the Expertise-based imitation effect is tested in isolation from the Rivalry-based imitation effect H2 is supported.

Models 6 and 7 test the existence of a Rivalry-Based imitation effect. Model 6 shows that, without considering the intensity of competition, the number of competitors disclosing information in the previous period (*NRivalry*) has no effect on the newspapers propensity to disclose (P-value>.10). However, Model 7 shows that when the interaction term between the variables *NRivalry* and *Market Concentration* is included, the main effect of *NRivalry* is positive and highly significant (P-value < 0.001) and the interaction term is negative and significant (P-value < 0.001). These findings indicate that the existence of a Rivalry-Based imitation depends on the intensity of competition. This outcome supports H3 and H4.

Model 8 presents a comprehensive picture testing for the two imitation effects at the same time. This model repeats the same results by showing the relevance of each imitation effect using the other imitation effect as a control variable. When both imitation effects are tested together, the Expertise-Based imitation effect loses significance, but it maintains with a P-

value < 0.1 in the same way when they were tested independently. In the same vein, the influence of the intensity of competition on imitation keeps the same significance (P-value < 0.001), supporting H3 and H4. Hence, the evidence provided by the set of models in Table 4 suggests that National newspapers imitate each other mainly for rivalry reasons and, in less measure, by uncertainty reasons.

Finally, regarding the control variables, the probability of disclosure is positively and significantly related with the firm's disclosure behavior (*Inertia*) in the immediate previous period. In other words, there is evidence of some disclosure inertia in the setting. On the other hand, the variable *Uncertainty* turned out to be significant. This indicates that as the firms are more familiar with disclosing information, they have a lower propensity to disclose. Regarding the performance measure (*Performance*), it has a negative and significant effect on disclosure, indicating that as the firms' performance gets worst, the less the good news to be revealed and hence, the less incentives they have to disclose. In the same vein, the variable *Market Concentration* is significant and positive, indicating that as the competition is lower, firms' propensity to disclose tends to rise. The variables *Age, Dictatorship* and *Subsidy* does not seem to have a significant effect on firm's probability of disclosure.

TABLE 4

National Newspapers: *Fixed Effects Logit Model testing Expertise-based and Rivalry-based imitation effects*

VARIABLES	*Control* 1	*H1* 2	*H2* 3	*H2* 4	*H1-H2* 5	*H3* 6	*H4* 7	*H1-H4* 8
National Expertise Age		-0.1253	0.5135	-0.8278+	-0.2314			0.3491
		(-0.3824)	(1.0547)	(-1.6788)	(-0.3934)			(0.4544)
National Expertise Age x Uncertainty			0.0198+		0.0228*			0.0239+
			(1.8564)		(2.1387)			(1.7163)
National Expertise Age x Age				0.0160+	0.0193*			0.0174+
				(1.7763)	(1.9988)			(1.7799)
National Rivalry						-0.2536	10.9724****	9.5875***
						(-1.6179)	(3.8785)	(3.1653)
National Rivalry x Market Concentratio							-9.9595****	-9.0060****
							(-3.9194)	(-3.3000)
Uncertainty	0.3544***	0.3578***	0.3312***	0.3727****	0.3513***	0.3732***	0.4391***	0.4550***
	(3.2466)	(3.2491)	(3.0785)	(3.3342)	(3.2317)	(3.1520)	(2.9249)	(2.8083)
Age	0.3518	0.3372	0.6056	0.2763	0.5800	0.2754	1.0423+	1.2742+
	(0.8400)	(0.8001)	(1.3533)	(0.6418)	(1.2706)	(0.6107)	(1.8029)	(1.9088)
Market Concentration	6.2710**	6.7988*	6.6356*	7.3099*	7.5573*	6.8306**	69.6054****	64.0583****
	(2.6013)	(2.4269)	(2.3487)	(2.5683)	(2.5727)	(2.6418)	(4.1776)	(3.5508)
Inertia	4.0000****	3.9992****	3.7788****	3.9993****	3.7225****	4.4389****	4.3349****	4.4971****
	(8.4292)	(8.4211)	(7.8436)	(8.2739)	(7.5431)	(7.6388)	(6.2707)	(5.8455)
LogGNP	26.0742****	27.2205****	20.5854*	28.2904****	21.0157**	31.4124****	17.3058+	14.4318
	(3.8140)	(3.6305)	(2.5668)	(3.7558)	(2.6193)	(4.0386)	(1.9437)	(1.5850)
Performance	-7.2262***	-7.1911***	-8.3171***	-8.1333***	-9.6591****	-6.8840***	-8.6572***	-10.1105***
	(-3.0321)	(-3.0257)	(-3.1585)	(-3.2680)	(-3.4633)	(-2.8655)	(-2.8319)	(-3.0163)
Subsidy	0.0159	-0.1192	0.3323	-0.1126	0.4585	-0.3120	-2.1921	-1.5246
	(0.0151)	(-0.1080)	(0.2835)	(-0.1001)	(0.3778)	(-0.2911)	(-1.5865)	(-0.9544)
Dictatorship	-0.1444	-0.1386	-0.2843	-0.3854	-0.6400	-0.3147	1.7805	0.7689
	(-0.1006)	(-0.0966)	(-0.2082)	(-0.2666)	(-0.4737)	(-0.2143)	(1.0059)	(0.4374)
Observations	851	851	851	851	851	851	851	851
Number of firms	13	13	13	13	13	13	13	13
Pseudo R^2	0.6360	0.6360	0.6450	0.6450	0.6560	0.6430	0.7000	0.7120
P-Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
χ^2	269.3	269.5	273.1	273	277.9	272.1	296.3	301.3
Degrees of freddom	8	9	10	10	11	9	10	13
Log-Likelihood	-77.01	-76.94	-75.1	-75.18	-72.74	-75.63	-63.54	-60.99

This table shows the results of a fixed-effect logit model. Estimators of each variable are reported on the top row and $\chi 2$ test values appear in brackets below each coefficient. +,*,**,***,**** indicate significance at 10%, 5%, 1% , .5% and .1% levels correspondingly. Estimated models have the expression $\pi(X_{it})=P(y_{it}=1|X_{it})=\exp[X_{it}'\beta]/(1+\exp[X_{it}'\beta])$, where $\pi(X_{it})$ is the probability of voluntary disclosure for firm *i* at time t, β is the vector of estimated coefficients and X is the vector of exogenous variables included in the model. *National Rivalry* for any national firm *i* is the number of rival national newspapers (different from *i*) disclosing information in the period t-1. *National Expertise Age* for any national firm *i* is the number of national firms older than 50 years (different from *i*) disclosing information a time t-1. *Uncertainty* is the negative of the accummulated number of disclosing periods of firm *i* from time t=0 to to time t-1. *Age* is the number of years that firms have been in the market. *Market Concentration* is the logarithm of the number of potential readers in Spain at time t divided by the number of national firms in the market at time t. *DisInertia* is a dummy varible with a value of 1 if firm *i* disclosed at time t-1 and 0 otherwise. *LogGNP* is the logarithm of the gross national product in Spain at time t. *Performance* is the yearly average hazard rate (i.e. prob. of bankruptcy) measure for firm t. *Subsidy* is a dummy variable with a value of 1 if time t occurs after 1984 and 0 otherwise. *Dictatorship* is a dummy variable with a value of 1 if time t occurs after the dictatorship period in Spain and 0 otherwise.

Table 5 shows a set of models analyzing the Expertise-Based imitation effect among Local newspapers. Like in the previous database, there is no positive direct effect of the number of National newspapers (*LExpertiseSize*) releasing information in the previous period over the Local newspapers' probability of disclosing information. Hence, we did not find a direct support for H1. Nevertheless, the interaction of *LExpertiseSize* with the specific

uncertainty about the consequences of disclosing information (*Uncer*) is significant and positive in all models (P-value < 0.005), indicating that as the Local newspapers experience in disclosing information is lower, they are more likely to copy large firms, in this case, National newspapers. This finding provides strong support for H2 and indirect support for H1. In relation to the effects of the variable LExpertiseAge as well as its interactions with the uncertainty variables (*Uncertainty* and *Age*) we cannot find any significant degree.

Regarding the control variables, *Uncertainty* and *Inertia* are significant, as in the case of National newspapers. However, different from the National firm's case, the variable Performance is non-significant indicating that the performance does not seem to play an important role as driver of disclosure. This might be because these firms do not face real competition, and hence, they have a kind of "captive markets" in which they are not penalized for revealing bad news (e.g. a low figure of sold items). Another difference in relation with the National newspapers is that older Local firms, as measured by the variable *Age*, tend to disclose more information, perhaps because they are more familiar with the characteristics of the market. This influence does not exist for National newspapers probably because they have other resources to get information about the market and hence, the age of the firms is not a significant driver of disclosure.

TABLE 5

Local newspapers: *Fixed Effects Logit Model testing Expertise-based imitation iffect*

VARIABLES	1	*H1* 2	*H2* 3	*H2* 4	*H1-H2* 5	*H1* 6	*H2* 7	*H2* 8	*H1-H2* 9	*H1* 10	*H2* 11	*H2* 12	*H1-H2* 13
National Expertise Size		-0.1303*	-0.0655	-0.0795	-0.0265					-0.1004	-0.0318	-0.0021	0.0445
		(-2.2645)	(-1.0392)	(-0.9271)	(-0.2965)					(-1.4864)	(-0.3393)	(-0.0272)	(0.4478)
National Expertise Size x Uncertai			0.0082***		0.0081***							0.0094***	0.0091***
			(2.9254)		(2.8790)							(3.2462)	(3.1210)
National Expertise Size x Age				-0.0010	-0.0007						-0.0013		-0.0010
				(-0.8190)	(-0.6290)						(-1.1060)		(-0.8556)
Local Expertise Age						-0.0591+	-0.0591+	-0.0692*	-0.0688+	-0.0311	-0.0481	-0.0574	-0.0669
						(-1.9220)	(-1.8457)	(-2.0011)	(-1.9428)	(-0.8610)	(-1.2133)	(-1.4239)	(-1.5782)
Local Expertise Age x Uncertainty							0.0000		0.0000			0.0002	0.0003
							(0.0034)		(0.0573)			(0.4105)	(0.5530)
Local Expertise Age x Age								0.0002	0.0002		0.0003		0.0002
								(0.6165)	(0.6197)		(0.9631)		(0.7496)
Uncertainty	0.1081****	0.1052****	0.0554**	0.1046****	0.0554**	0.1050****	0.1050****	0.1046****	0.1035****	0.1043****	0.1030****	0.0379	0.0354
	(9.0438)	(8.8101)	(2.6567)	(8.7300)	(2.6508)	(8.7773)	(4.6373)	(8.7105)	(4.5449)	(8.7241)	(8.5322)	(1.2934)	(1.2005)
Age	0.4163****	0.3416****	0.3692****	0.3476****	0.3733****	0.5102****	0.5103****	0.5071****	0.5083****	0.4081***	0.4117****	0.5078****	0.5048****
	(4.5736)	(3.5251)	(3.7985)	(3.5735)	(3.8299)	(4.9314)	(4.8357)	(4.8973)	(4.8103)	(3.2873)	(3.2970)	(3.9783)	(3.9393)
Inertia	6.4893****	6.5246****	6.6841****	6.5218****	6.6768****	6.4368****	6.4366****	6.4303****	6.4263****	6.4867****	6.4779****	6.6020****	6.5819****
	(28.5657)	(28.7924)	(27.5232)	(28.8051)	(27.5400)	(28.5096)	(27.2948)	(28.4389)	(27.2033)	(28.2927)	(28.2630)	(26.2968)	(26.2548)
LogGNP	-1.7137	0.7878	0.0586	0.7858	0.0687	-2.0013	-2.0040	-2.0531	-2.0977	0.0809	0.0109	-1.6655	-1.6763
	(-0.9055)	(0.3576)	(0.0264)	(0.3567)	(0.0310)	(-1.0582)	(-0.9821)	(-1.0857)	(-1.0255)	(0.0343)	(0.0046)	(-0.6768)	(-0.6822)
Performance	-1.8338	-1.5084	-1.7956	-1.5033	-1.8021	-2.0934	-2.0944	-2.2269	-2.2433	-1.7179	-1.9145	-2.3566	-2.5158
	(-0.9759)	(-0.8124)	(-0.9601)	(-0.8106)	(-0.9649)	(-1.1210)	(-1.1098)	(-1.1879)	(-1.1828)	(-0.9172)	(-1.0213)	(-1.2424)	(-1.3353)
Subsidy	-0.0590	-0.3574	-0.5716	-0.3648	-0.5767	-0.1550	-0.1547	-0.1704	-0.1665	-0.3455	-0.3830	-0.5479	-0.5689
	(-0.1405)	(-0.8115)	(-1.2784)	(-0.8279)	(-1.2895)	(-0.3639)	(-0.3587)	(-0.3991)	(-0.3849)	(-0.7791)	(-0.8595)	(-1.2046)	(-1.2464)
Dictatorship	-0.0538	-0.2433	-0.3913	-0.2345	-0.3835	0.3718	0.3723	0.3938	0.4017	0.0261	0.0773	0.1508	0.1844
	(-0.1196)	(-0.5318)	(-0.8739)	(-0.5127)	(-0.8565)	(0.7418)	(0.7173)	(0.7851)	(0.7717)	(0.0472)	(0.1397)	(0.2750)	(0.3364)
Observations	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522	6,522
Number of firms	82	82	82	82	82	82	82	82	82	82	82	82	82
Pseudo R^2	0.822	0.823	0.825	0.823	0.825	0.823	0.823	0.823	0.823	0.823	0.824	0.825	0.825
Pχ^2value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4389	4394	4403	4395	4403	4393	4393	4393	4393	4395	4397	4406	4407
Degrees of freddom	7	8	9	9	10	8	9	9	10	9	11	11	13
Log-Likelihood	-474.7	-472.2	-467.9	-471.8	-467.7	-472.9	-472.9	-472.7	-472.7	-471.8	-471	-466.4	-465.9

This table shows the results of a fixed-effect logit model. Estimators of each variable are reported on the top row and $\chi 2$ test values appear in brackets below each coefficient. +,*,**,***,**** indicate significance at 10%, 5%, 1% , .5% and .1% levels correspondingly. Estimated models have the expression $\pi(X_{it})=P(y_{it}=1|X_{it})=\exp[X_{it}'\beta]/(1+\exp[X_{it}'\beta])$, where $\pi(X_{it})$ is the probability of voluntary disclosure fo firm *i* at time t, β is the vector of estimated coefficients and X is the vector of exogenous variables included in the model. *National Expertise Size* for any local firm *i* is the number of national firms older than 50 years disclosing information a time t-1. *Local Expertise Age* for any local firm *i* is the number of local firms older than 50 years (different from *i*) disclosing information a time t-1. *Uncertainty* is the negative of the accummulated number of disclosing periods of firm *i* from time t=0 to to time t-1. *Age* is the number of years that firms have been in the market. *Market Concentration* is the logarithm of the number of potential readers in Spain at time t divided by the number of national firms in the market at time t. *DisInertia* is a dummy varible with a value of 1 if firm i disclosed at time t-1 and 0 otherwise. *LogGNP* is the logarithm of the gross national product in Spain at time t. *Performance* is the yearly average hazard rate (i.e. prob. of bankruptcy) measure for firm t. *Subsidy* is a dummy variable with a value of 1 if time t occurs after 1984 and 0 otherwise. *Dictatorship* is a dummy variable with a value of 1 if time t occurs after the dictatorship period in Spain and 0 otherwise.

V. CONCLUSIONS AND FINAL CONSIDERATIONS

In this work we explore the imitation of disclosure practices of non-financial information in the Spanish Newspapers Industry from 1966 to 1993. Regardless of the content of the information disclosed (good news or bad news), we tested two possible motivations for this imitative behavior: uncertainty and competition. We hypothesized that if imitation is driven by the uncertainty about the consequences of disclosure, firms will imitate the disclosure actions of what they believe are more experienced firms and this imitation would increase with the degree of uncertainty faced by firms. On the other hand, if imitation is motivated by competition, we expected to see that firms imitate the disclosure behavior of what they consider as direct rivals and the strength of the imitation would increase with the number of rivals disclosing information and the market concentration.

Our results provide interesting insights about the imitation of disclosure patterns in our setting. Firstly, whenever firms face uncertainty, they tend to copy what they see as more "informed" organizations. In this regard, National organizations tend to imitate older firms and Local firms, imitate mostly what they perceive as large organizations. Moreover, the existence of this effect depends on the disclosure experience of firms. Firms that are unfamiliar with disclosing information are more likely to follow the actions of larger firms. In contrast, firms with more disclosing experience tend to be more autonomous when deciding whether disclosing or not. This result indicates that the imitation, in this case, is driven by informative reasons. Secondly, when firms face direct competition, the two effects exist simultaneously, although, in our setting, the Experience-based imitation became less representative and the Rivalry-Based imitation effect tended to be dominant.

This result is reasonable since more resourceful firms (such as National Newspapers) may have more resources to get information and scan the environment and hence, they are unlikely to imitate similar firms for information reasons (Gimeno et al. 2005). This result suggests that disclosing information is seen by firms as a potential element of competitive advantage. On the other hand, our findings indicate that this Rivalry-based effect depends on the degree of competition in the market. In other words, newspapers facing more competition are more likely to imitate their rivals to maintain their competitive position in the market. Thirdly, regarding the Expertise-based imitation effect, our results show that the accumulated disclosure experience seems to be a more robust measure of firm's uncertainty about the consequences of disclosure. Based on these conclusions, we believe that at least in some extend, we contributed to previous accounting literature by providing an analysis that studies simultaneously and disentangles two motivations to imitate.

Finally, we would like to remark that we only considered two types of isomorphism, one derived from the lack of certainty which have been addressed similarly by different fields (institutional isomorphism, information cascades, herding, etc.) and one derived from competitive forces. However, institutional literature recognizes the existence of another two imitation types that have no relation with uncertainty but are motivated by other forces: normative and coercive (DiMagio and Powell 1986)[9]. Since we didn't integrate these imitation drivers directly in our empirical model, we cannot rule out the possibility that our

[9] Normative isomorphism comes from the collective definition of the conditions and methods of the work delimited by the members of an occupation. This type of isomorphism is the one that can be attached for instance, to the professional mobility of executives among organizations, the common academic background of managers or the interaction of organizations through associations and commerce chambers. The second type, coercive isomorphism, refers to the case when firms imitate due to formal and informal pressures coming from the organizations they depend on or by cultural expectations of the society where the organizations operate (DiMagio and Powell 1986).

empirical findings are influenced by these factors (Mizruchi and Fein 1999). Nevertheless, we indirectly addressed some potential issues related with coercive forces. First, disclosure was not mandatory for organizations in any way during the analyzed period of time. Second, our inter-temporal approach together with the inclusion of the variable *Dictatorship* allow us to control for the informal pressure to increase transparency in markets demanded by democratic societies over time that potentially might force firms to disclose. Third, our results are naturally isolated from some coercive forces coming for stakeholders in capital markets (Aerts et al. 2005) since during the period analyzed all organizations were privately owned. Even though this controls, we cannot totally discard that the imitation observed might result from similarities in the ethical values or the academic background of managers of the firms, which could be considered as normative isomorphism. This flaw, however, is common in the empirical work since controlling for all the different types of isomorphism is quite a difficult task (Lieberman and Asaba 2006).

Regarding future research windows, we did not make any statement regarding the profitability of imitation. This is, how profitable is for firms to imitate industry leaders or competitors regarding disclosure behavior? Are there significant differences in profitability from imitating one or another? We consider this issue as an interesting and challenging field for future research.

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CHAPTER II

IMPATIENCE IS THE POWER'S FEEBLENESS: INFORMATION SHARING AND DELAY COSTS[10]

ABSTRACT

In this work, we specifically explore how penalties for delay influence the usually found negative relation between traders' bargaining power and their willingness to share accounting information. We propose that the interaction between bargaining power and delay cost is likely to rise up most powerful firms' impatience to close negotiations. Under these circumstances, this type of firms might want to share accounting information to reach early agreements. To test this argument, we conduct an experiment with 670 under-graduate students using a sequential bargaining setting with incomplete information. Our results support our main thesis, and we conclude that penalties for delay are able, at least to some extent, to diminish the negative effects of bargaining power over information sharing.

Keywords: Sharing information, experiment, delay cost, bargaining power

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I. INTRODUCTION

The sharing of information between supply chain members generates improvements in coordination that enhance the overall efficiency of the supply chain[11] (e.g. Kulp, Lee and Ofek 2004). However, the existence of bargaining power asymmetries may impede this efficiency gains since most powerful supply chain members tend to withhold information (e.g. Van den Abbeele, Roodhooft and Warlop 2009). Taking the buyer's side, we use an economic experiment based on the theoretical notions of non-cooperative bargaining theory to study how the economic incentives (in the way of delay costs) of this framework influence the bargaining power-information sharing relation. We propose that when penalties for delay are considered, more powerful buyers will be more eager to close negotiations and this impatience will result in a higher willingness to share information.

Buyer's impatience (for reaching agreements) arises due to the jointed action of bargaining power and delay costs. When considered separately, both factors may be associated with a lower buyer's willingness to share information. As shown by previous work, more powerful buyers will tend to share less information due to sociological reasons (Van den Abbeele et al. 2009). On the other hand, delay costs may provide buyers (e.g. when they get to make an offer) with a bargaining advantage that might substitute the sharing of information as a coordination mechanism. Hence, as the delay costs are higher, buyers are less likely to share information. However, when these two previous factors interact, we claim that the jointed effect is likely to motivate information sharing. More powerful buyers expect higher profits from negotiations and hence, they also incur in higher loses as

[11] The gains of improving coordination among supply chain members may represent a reduction in costs and/or an increase in the supply chain value-added by up to 25% (Crook and Combs 2007).

negotiations get longer and penalties for delay increase. This type of buyers will be more interested in finishing negotiations as early as possible. In this regard, theoretical and experimental research indicates that the disclosure of information might enhance coordination and decrease the length of negotiations (Black and Bulkley 1988; Valley Gibbons and Bazerman 2002). Thus, given the urgency of more powerful buyers to reach agreements and the role of information sharing as an agreement facilitator, we propose that more powerful buyers would be prone to share accounting information in order to shorten negotiations.

Despite non-cooperative sequential bargaining settings began in the 80's (e.g. Rubinstein 1985; Grossman and Perry 1986; Cramton 1984)[12], the evaluation of strategic theories of bargaining with private information using experiments is a relatively recent line of research (Ausubel, Cramton and Deneckere 2002). In this regard, previous experimental accounting literature studying the factors driving the use of accounting information in negotiations between buyers and sellers is scarce. To our knowledge, only one previous piece of work deals with this topic by analyzing the moderating effect of bargaining power on the voluntary sharing of information, taking mainly a buyer's perspective (Van den Abbeele et al. 2009). This paper explores the sociological notion that powerful buyers rely on

[12] Game theorists have modeled this type of bargaining situations under different assumptions, for example, considering complete information (Rubisntein 1982), one-sided incomplete information alternating offers (Grossman and Perry 1986, Rubinstein 1985) and two-sided incomplete information alternating offers (Chatterjee and Samuelson 1987; Cramton 1992) or with single side offers (Cramton 1984). In the same vein, some previous research has developed models where bargainers may have outside options. For example, Fudenberg, Levine and Tirole (1987) developed a one-sided incomplete information model (seller's valuation is common knowledge) where only the seller was allowed to make offers. In this model, only the seller (not the buyer) was allowed to look for outside options or consume the good himself. In the same vein, Chatterjee and Lee (1998) provided a model with complete information (both parties valuation was known), with only the seller making offers but allowing the buyer to search for outside opportunities. Chikte and Deshmukh (1987) modeled a game where both parties can perform outside searching considering that their searching abilities are common knowledge.

enforcing mechanisms to negotiate and provides experimental evidence supporting a negative relation between buyers' bargaining power and the sharing of accounting information and leaves an opened door for further accounting research on incentive systems that stimulate a higher flow of information among supply chain members (Van Abbeele et al. 2009, 262). We take a step on that direction by analyzing how the consideration of delay costs modifies the already known negative relation between bargaining power and delay costs.

In order to test this idea, we conducted an experiment with 670 under-graduate (students) volunteers simulating a price negotiation among independent supply chain members following the main features of a sequential bargaining situation with one-sided asymmetric information and alternating offers (Grossman and Perry 1986; Srivastava 2001). We choose this specific bargaining setting to develop our work since on one hand, previous research (theoretical and experimental) provides intuition about the general behavior of negotiators in this bargaining context, and on the other, the potential effect of the economic incentives of this setting over the traders' willingness to share accounting information has not been addressed in the past. For testing our arguments, we manipulated the bargaining power asymmetries (by the introduction of outside options to the buyer) and the level of the delay cots (high and low). Our results confirm that the economic incentives created by delay costs are able, at least in some extent, to motivate powerful partners to share information, mitigating the natural propensity of powerful partners to withhold their private accounting information.

Our main contribution is identifying and testing a factor (delay costs) that interacts with bargaining power to create effective incentives (impatience) to motivate the sharing of information among supply chain members (reducing the inefficient behavior of most powerful parties). A secondary contribution of this paper is to complement previous accounting work relating bargaining power and information sharing by linking this research line with the empirical and theoretical work developed by the economics field. Finally, we contribute to engross the currently body of experimental research using dynamic bargaining models with incomplete information, both in the fields of economics and accounting (Ausubel et al. 2002).

The rest of the paper has five sections. First, we provide our theoretical development of our set of hypotheses relating bargaining power, delay costs and impatience with information sharing. The third section describes the experimental procedure. The fourth section provides experimental results supporting the validity of our hypotheses. Finally, in section five we discuss our results, make conclusions and address some options for future research.

II. THEORY AND HYPOTHESES

Figure 1 provides a comprehensive summary of our set o hypotheses.

FIGURE 1

Summary of hypotheses

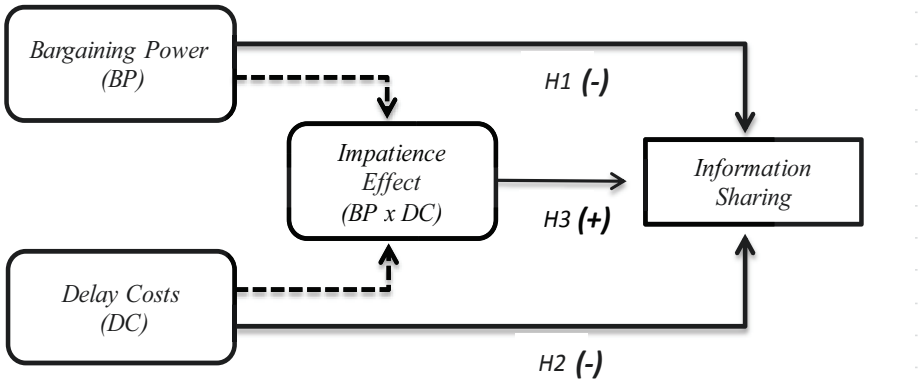


Figure 1 shows a comprehensive summary of the hypothesis. **H1:** The probability of sharing information will decrease as the bargaining power held by a firm increases. **H2**: The probability of sharing information will decrease as the delay costs held by a firm increases. **H3**: In high delay cost bargaining environments, the strength of the negative effect of bargaining power on information sharing will be smaller.

Bargaining Power and information sharing

As mentioned before, the primary goal of this study is to analyze how delay costs influence the effect of bargaining power on information sharing. As a first step, we clarify the definition of power and the way in which it affects the buyer's willingness to share information. For the purposes of this essay, we use a notion of power developed by Social Exchange Theory, according to which, traders will be more powerful as their outside options are more valuable than their counterparty's (e.g. Emerson 1962; Wolfe and Mcginn 2005). Despite our work is based on an economic framework (Non-Cooperative Bargaining Theory), we adopted this social definition due to two mayor considerations. Firstly, both theoretical approaches (economic and social) coincide in identifying the existence of alternative outside options as an important source of power in bargaining situations (i.e. Emerson 1976; Chikte and Deshmukh 1987). Secondly, this conceptualization of power has been used by accounting literature relating power and information sharing, both in experimental and archival essays (Van den Abbeele et al. 2009; Schoeltzer 2012). Thus,

using this same notion of power allow us to better compare our results with previous work inside Accounting. According to Social Exchange Theory, the bargaining power of a buyer over a seller is given by the buyer's capacity to influence the seller's actions[13] (Emerson 1976). This capacity to influence on the counterparty's actions (i.e. bargaining power) is a function of the relative dependency among parties, which is likely to increase (decrease) as the buyer's valuation of the resources provided by the seller increases (decreases) (Emerson 1962). Given this dependency-based view of power, those buyers possessing more valuable alternatives than their trading partners would have a lower valuation of the resources provided by their counterparties and hence they will be less dependent and as a consequence, more powerful (Wolfe and Mcginn 2005).

In bargaining situations, sharing private information is likely to enhance the coordination among partners, leading to potential better agreements (Cramton 1984). However, this positive effect is not costless since sharing information might deteriorate the bargaining position of negotiators (e.g. Black and Bulkley 1988) [14]. As a consequence, a profit-maximizing buyer capable of inducing coordination by any other mechanisms will tend to share less information, since in this way she might minimize the costs of disclosure without compromising their negotiation goals. In this regard, more powerful buyers (buyers having better outside options) tend to use other mechanisms (e.g. more distributive bargaining strategies, stick to a position, etc.) instead of sharing information with their counterparties. This notion suggests that as the bargaining power of negotiators increases, their willingness

[13] As we mentioned before, we conduct the analysis from the buyer's perspective and hence, we do not formulate any hypothesis regarding the seller's initial beliefs or initial offer in the negotiation.

[14] Different from the proprietary costs mentioned by the disclosure literature (e.g. Verrecchia 1983), in bargaining situation, costs are not associated to the risk of replication or the impossibility of controlling the potential receivers of the information, but with the deterioration of the bargaining position.

to share information tends to be lower. Even when this idea has been tested already in previous accounting and sociological experimental work in settings where delay costs are not considered (Van den Abbeele et al. 2009; De Dreu and Van Kleef 2004), we formulate the following hypothesis in order to verify if this negative relation also holds in a bargaining setting where penalizations for delay are taken into account:

> *Hypothesis 1 (H1): The probability that a buyer shares information decreases as its bargaining power increases.*

Delay costs and information sharing

The term "delay costs" refers to the profit losses resulting from delaying agreements. These costs vary according with the time-sensitiveness of the profits related to negotiations. This is, if the profits associated with negotiations are expected to decrease slowly (fast) as the time goes by (i.e. as negotiations are longer), then the delay costs faced by bargainers will be lower (higher). In this sense, factors such as the speed at which the consumer's interest in the negotiated product is eroded, the existence of contractual penalizations (e.g. due to late delivery) or market's contestability (e.g. threat potential competitive entry) may generate higher business' time-sensitiveness and hence, higher delay costs (Srivastava, Chakravarti and Rapoport 2000).

In negotiation settings where the penalization for delay is identical for buyers and sellers, the trader making an offer has a negotiating advantage that increases with the level of delay costs (Rubinstein 1982). Based on this notion, we suggest that as the delay costs increase, buyers making offers will enjoy a more favorable bargaining position and hence, they will

avoid potential costs of sharing information by relying more on the use of this mover's advantage (i.e. submitting lower counterproposals) than in sharing information. In other words, when buyers get to make an offer, the existence of delay costs provides them an additional bargaining plus that acts in parallel with the effect explained H1, and generates a decrease in the buyer's willingness to share information. This notion motivates the following hypothesis:

> *Hypothesis 2 (H2): The probability that a buyer shares information decreases as the delay costs attached to the negotiation increase.*

Information sharing and impatience

We mentioned that, regardless of the buyer's bargaining power, the presence of higher delay costs exerts a direct negative effect on the buyer's decision of sharing information (H2). However, we claim that the global effect of delay costs on information sharing includes another effect that depends on the buyer's bargaining power. We refer to this effect as "*impatience*".

More powerful buyers are likely to obtain larger shares of negotiation profits (e.g. Pinkley, Neale and Bennet 1994; De Dreu and Van Kleef 2004, Van den Abbeele et al. 2009)[15]. As a result, these buyers (i.e. more powerful) face larger potential losses as the total penalization for delay increases. Consequently, this kind of buyers will be more impatient to reach agreements in order to minimize global profit losses (Grossman and Perry 1986).

[15] If the size of the cake is not time-sensitive (i.e. there are no costs for prolonging negotiations), an immediate result it that the profits in absolute value earned by more powerful traders are also larger than those obtained by less powerful ones (e.g. Van den Abbeele et al. 2009).

The voluntary sharing of information may be an effective mechanism to reduce the uncertainty generated by information asymmetries, speed up coordination (e.g. Rubinstein 1982; Cramton 1984; Crawford 1990) and reaching earlier agreements (e.g. Crawford and Sobel 1982; Crawford 1990; Valley et al. 2002)[16]. Given this role of information as coordination enhancer, one would expect that more impatient buyers (i.e. powerful with higher delay costs) would show a higher willingness to disclose information (in order to reduce the length of negotiations and avoid further profit losses due to delay costs). Hence, even when the willingness to share less information is expected to decrease with the buyer's bargaining power (H1), we propose that this negative relation is likely to be smaller as buyers face higher delay costs. This reasoning motivates the following hypothesis:

Hypothesis 3 (H3): The probability of sharing information of more powerful buyers increases with the level of delay costs.

III. METHODOLOGY

Design of the Experiment

In order to test our Hypotheses, we conducted a 2 x 2 experiment design. We use this experimental approach in accordance with prior accounting and economics sources (Van

[16] Due to the existence of delay costs, the notion of efficiency in our bargaining contexts is negatively related with the length of negotiations. In other words, earlier agreements minimize global penalizations for delay and hence, shorter negotiations are considered more efficient. For a detailed review of the efficiency in bargaining situations see Camerer and Loewenstain (1993).

den Abbeele et al. 2009; Srivastava et al. 2000; Srivastava 2001). In our experimental design, we monitor the relative power (high or equal) as well as the cost of delaying the negotiation (high or low) of the participants, in order to see how these factors influence the parties' willingness to voluntary disclose information.

The participants negotiated in dyads composed by one seller and one buyer. Power was manipulated by informing the participants about the availability of outside options for themselves (e.g. Giebels, De Dreu and Van de Vliert 2000, Pinkley et al. 1994), as well as a notion of their counterparties' (Wolfe and Mcginn 2005). In the higher power buyer dyad, the buyer was told that he had other options in the market while his counterpart considered him as his top choice. In this case, the buyers were informed that the value of their alternative was 5 euros[17]. On the other hand, the supplier was told that he did not have any other alternative to transact in the market, but the buyer considered him his favorite option. In the equal power group, buyers and sellers were told that they did not have any other alternative to transact in the market, but that they were the favorite option for their partners. In this case, the value of the outside options was fixed at zero. The value of the external choices was treated as private information for each partner in order to achieve ecological validity (Wolfe and Mcginn 2005).

Regarding the delay costs, we manipulated this concept by informing the participants that their benefits would be discounted by a factor equal to d^{t-1}. Where t accounts for the current round of the negotiation and d is a parameter measuring the time sensitiveness of the business opportunity linked to the negotiation. The value of the parameter d was fixed at

[17] This value was fixed at a level in which the buyer is in a more favorable position for negotiating but it is relatively unattractive compared with the potential gains from trading (Van den Abbeele et al. 2009).

0.90 for the low delay cost group and at 0.60 for the high delay cost group (Srivastava, 2001). In order to facilitate the participant's calculations, we provided them with a figure indicating the value of the discount factor at every negotiation round. Finally, the directions of the experiment indicated to both negotiators that "their counterparty has a good reputation on the market and that you two completed successful transactions in the past". This statement was introduced in order to create a sense of trust within the dyads. We did not manipulate this concept in the experiment.

Negotiation task

The negotiation task of the experiment follows the basic structure of a non-cooperative bargaining process with alternating offers and one-sided incomplete information developed analytically by Grossman and Perry (1986) and tested experimentally by Srivastava (2001), incorporating two main changes: a) differences in bargaining power among traders given by outside options and b) the possibility for the buyers to share their private information explicitly while submitting offers during bargaining.

Our experimental setting simulates a negotiation between a seller and a buyer. The seller is a producer of a good with a unitary production cost, $C_P = 100$ euros. The buyer, on the other hand, is a middle man buying 1 unit of the good from the producer at a price P_t and reselling it to an end consumer at a fixed price, P_{EC}=150 euros. Both C_P and P_{EC} are common knowledge to traders. The buyer, however, has a distribution cost (C_D) of 10 euro per unit that is only known by her. The asymmetry in information is common knowledge for both individuals. The bargaining proceeds sequentially during a series of infinite

discrete periods of time. In the first period the seller makes a price offer, P_1, and the buyer either accepts or rejects. If the buyer accepts, the negotiation ends in the first period. However, if the buyer rejects, she makes a counteroffer P_2, at period two. When making a counteroffer, the buyer is allowed to share his private information with the seller. Offers and counteroffers continue until an agreement is reached or any of the parties ends the negotiation without reaching any agreement. In this setting, the bargainer's gains diminish according to a commonly known discount rate equal to d^{t-1} as the periods needed to reach an agreement are more than one. Considering this features, the benefits for each partner at any period t of the negotiation are $\pi_{Seller_t} = (P_t - C_P)\, d^{t-1}$ and $\pi_{Buyer_t} = (P_{EC} - C_D - P_t)d^{t-1}$[18]. If the process ends without an agreement, the parties' payoffs are equal to a certain value defined by their outside options.

An important theoretical intuition of the used bargaining task is that buyer's actions are driven by the interaction between their expected profits and the costs of delay. These two factors together model the buyer's preferences about the length of negotiations, or in other words, the buyer's impatience for reaching agreements. Depending on the level of this impatience, negotiations could take one of three different paths: a) buyers accepting the initial offer; b) buyers rejecting the initial offer and making an acceptable counterproposal; c) buyers rejecting the initial offer and making an unacceptable counterproposal (Grossman and Perry, 1983). Given that this work analyzes the buyers' willingness to share information in a negotiation context in which information cannot be share unless the

[18] In this context, the seller's strategy would be to offer a price that maximizes her expected payoff based on the discount factor and her belief about the buyer's valuation. On the contrary, the buyer's strategy would consist in using the seller's offer to compare the payoff in the current period to the discounted payoff in future periods and decide whether accepting it or making a counter proposal revealing or not information to the seller (Srivastava 2001).

seller's initial offer is rejected, we do not make any hypothesis regarding the information sharing behavior of the group of buyers accepting the initial offer. In other words, we do not explore how the existence of private information influences the buyer's decision of accepting the seller's first offer or not[19]. Instead, we concentrate our analysis in the buyers who have decided to negotiate and need to make the decision of whether sharing information or not with their counterproposals.

Participants and procedure

Participants were recruited from the management accounting undergraduate courses at a large university in Spain during the first term of the academic year 2011-2012. Students were told that their participation in the experiment was voluntary. They also were notified about the room, time and date of the experimental sessions, as well as the potential rewards the may obtain in case of attending the experiment. At the end of the day, the experiment was conducted with *670* participants during eight experimental one-hour sessions. According to this recruitment procedure, we consider our participants as volunteers (Eckel and Grossman 2000).

On the other hand, we consider that undergraduate students were appropriate for our experimental testing since economic theories are likely to be applied in general, not only to older or graduated individuals (Croson 2005). In the same manner, even when the participants' behavior in the laboratory may differ from that of a CEO (e.g. Levitt and List 2007), the use of undergraduate students is a common practice in experiments testing

[19] A possible consequence of this approach is that our sample has some selection bias. However, working with this subsample allows a more direct interpretation of the factors driving the trader's decision of sharing information.

economic theories (e.g. Binmore, Morgan, Shaked and Sutton 1991; Fisher, Frederickson and Sean 2000; Valley et al. 2002; Solnick 2007).

Regarding the rewards, the payment was consistent with the theory to be tested (e.g. Croson 2005). The rewards involved a fixed payment of 0.25 points over the participant's final grade of their management accounting class (this fixed payment was given to all participants), plus a variable payment up to an additional 1.25 points (e.g. James and Cohen 2004) depending on the participant's performance during the negotiation. The fixed payment allows us to offset the effects of randomization and to encourage the participation of more risk-adverse subjects (Heckman and Smith 1995; Harrison, Johnson, McInnes and Rutstr m 2005). The variable payment helps to encourage the involvement of participants in the bargaining task in the participants. The economic value of the fixed and variable rewards was 4.50 and 22.21 euro, respectively. This difference assures the involvement of the undergraduate students within the negotiation (Croson 2005). The fixed payment was given to the participants in a coupon at the end of the experiment while their variable reward was informed to them the day after the experiment.

The participants were randomly assigned to one of the four conditions (high bargaining power-low delay cost, high bargaining power-high delay cost, low bargaining power-low delay cost and low bargaining power-high delay cost) and to a role (buyer or seller). Buyers and suppliers sat in different rooms so negotiations were anonymous. As a first step, the participants received a brief explanation of the general purpose of the experiment, the possible payoffs, their information endowments and their set of available actions. Then, they were given 15 minutes to read the written directions and ask questions about it. After

this (but before starting the negotiation), participants filled out an initial questionnaire in order to collect data regarding their perceptions of bargaining power, as well as other general characteristics such as trust perception, age, gender and professional experience. Once this previous stages were completed, the negotiation started. The negotiation consisted in a sequence of offers and counter-offers (started always by the seller) until a final agreement was reached, any of the parties left the negotiation or the time limit of the experiment was over. At any stage of the negotiation, participants were free to share any information with their counterparts in a written way. All offers, counter-offers and information shared during the trading were written on a negotiation sheet that was visible for both partners during all the experiment. Finally, after negotiations were closed, participants filled out a brief final questionnaire in order to check if their perceptions of power and trust suffered any change during the negotiation process.

Since the experiment was conducted with 670 participants (335 dyads), our database captures the characteristics of 335 buyers. The data of 33 buyers was not considered for the empirical testing due to missing values and hence, our database was composed by 302 buyer-observations. Table 1 shows the distribution of participants by accounting course and undergraduate program. As previously mentioned, in this work we focus on the buyers rejecting the seller's first offer and making a counterproposal. From the 302 buyers in our database, 149 buyers (49%) accepted the first offer and hence, our sample for testing our set of hypotheses was composed by the remaining153 buyers.

TABLE 1

Distribution of participants according with accounting courses and undergraduate program

Accounting courses		Undergraduate Program	
Cost Management	17%	Accounting & Finance	17%
Cost Accounting	83%	Business Administration	56%
		Law & Business Administration	27%
Total	**100%**	**Total**	**100%**

Variables

Endogenous Variables

Buyer's information sharing. This variable assigns a value of 1 if the buyer released its private cost information to the seller.

Exogenous Variables

Bargaining Power. This variable accounts for the condition assigned to participants in the experiment. It takes a value of 1 if the buyer belonged to the high power condition of the experiment and 0 otherwise.

Delay Costs. This variable accounts for the condition assigned to participants in the experiment. It assigns the value of 1 to the buyers belonging to dyads in the high delay cost condition and 0 otherwise.

Impatience. This variable accounts for the interaction between the variables *Bargaining Power* and *Delay Costs.*

Control Variables

Buyer's First Counterproposal. This measure controls for the buyer's first counter proposal. The sharing of information may be conditioned by this factor since a very low offer is unlikely to be accompanied by information sharing because it might cause coordination problems due to fairness issues (Camerer and Loewenstain 1993; Bolton and Ockenfels 2000). On the other hand, this first counterproposal is the buyer's way to use her "mover advantage" by submitting lower counterproposals.

Rounds. This variable measures the number of rounds needed to reach an agreement. This is a variable typically used in theoretical and experimental bargaining literature (e.g. Grossman and Perry 1986; Srivastva 2001). We include this variable since the impatience for closing agreements increases as the negotiation reaches a higher round.

Trust. This is a self-reported measure of the buyer's trust in the supplier during the negotiation (from 1 to 100). Independently of the bargaining power or the delay costs, higher levels of trust may motivate buyers to release more information (e.g. Baiman and Rajan 2002).

Distributive. This control takes the value of 1 if any distributive negotiation mechanisms (e.g. threats) where used by the buyers and 0 otherwise. Buyers using this type of mechanisms intuitively are expected to share less information, hence, we include this variable in order to control for this factor[20].

[20] We do not include controls for factors such as gender, academic background or professional experience since they turned out to be non-significant in all models. We consider these non-significant results as an indicator that all these effects were randomized away. Results are available from authors.

IV. RESULTS OF THE EXPERIMENT

Summary of statistics

Table 2 displays a summary of statistics. As it can be seen, 44% of the buyers disclosed their cost information during the negotiation. On the other hand, in average, agreements were reached between two and three rounds (with a maximum of 8 and a minimum of 2). In the same vein, the average initial offer was approximately 118 euros (with a maximum of 130 and a minimum of 101). Regarding the variable *Trust*, the mean is observed at a value close to 55, which indicates that the average participant has a medium level of trust on her counterparty. In is interesting that the presence of distributive behavior was not common among the participants (around 6%)

TABLE 2

Descriptive Statistics

Variable	Observations	Mean	Standard	Minimum	Maximum
Buyer's Information Sharing	153	0.44	0.50	0	1
Bargaining Power (High=1/0 otherwise)	153	0.51	0.50	0	1
Delay costs (High=1 / 0 otherwise)	153	0.39	0.49	0	1
Impatience (Buyer's bargaining power x Delay costs)	153	0.21	0.41	0	1
Buyer's First Counterproposal	153	117.82	4.38	101	130
Rounds	153	2.61	1.13	2	8
Trust	153	54.87	18.80	10	100
Distributive	153	0.06	0.24	0	1

Table 2 presents means, standard deviations, minimums and maximums. All variables have been previously defined.

TABLE 3

Pearson (Spearman) Correlations Below (Above) the Diagonal of the Matrix

	1	2	3	4	5	6	7	8
1 *Buyer's Information Sharing*		-0.241 **	-0.115	-0.098	0.425 **	-0.227	0.008	-0.109
2 *Buyer's bargaining Power (High=1/0 otherwise)*	-0.241 **		0.038	0.504**	-0.185**	0.004	-0.033	0.078
3 *Delay costs (High=1 / 0 otherwise)*	-0.115	0.038		0.640**	0.041	-0.090	-0.068	-0.030
4 *Impatience (Buyer's bargaining power x Delay costs)*	-0.098	0.504 **	0.640**		-0.055	-0.058	-0.041	0.076
5 *Buyer's First Counterproposal*	0.334 **	-0.212 **	0.043	-0.090		-0.596**	0.109	-0.068
6 *Rounds*	-0.172 *	-0.040	-0.029	-0.049	-0.483 **		-0.238**	-0.008
7 *Trust*	0.038	-0.040	-0.064	-0.028	0.115	-0.207*		0.066
8 *Distributive*	-0.109	0.078	-0.030	0.076	-0.085	-0.036	0.063	

Table 3 presents the Pearson (Spearman) Correlations above (below) the diagonal of the matrix. (**) significant at 1%; (*) significant at 5% and (+)| significant at 10%. Variables defined previously.

As an experimental check, we corroborated that buyers assigned to the higher bargaining power condition indeed considered themselves as more powerful (F(247,1)=24.95, p<.0000). In the same vein, Table 3 shows the matrix of correlations among the variables. The correlations are in the expected direction and as we will show, none of them represent a potential estimation problem. The correlation between *Bargaining Power, Delay Costs* and *Impatience* was expected since the latter is calculated directly from the other two.

Hypotheses Testing

The results from a Levine's test for the different groups of the variables *Bargaining Power* (P>F(1,151)=0.0062) and *Delay Costs* (P>F(1,151)=0.0108) revealed that the assumption of equality of variances is not meet, and hence, we do not present any pairwise mean comparison among groups based on an ANOVA/ANCOVA analysis[21]. Instead, in order to test or hypotheses, we use a logistic model. Table 4 shows the estimation of a logistic model (coefficients, odds ratio and marginal effects) calculated using Stata 12.

[21] When the equal variance assumption is not fulfilled, the results of the ANOVA/ANCOVA analysis may be incorrect or misleading. This problem is magnified when the sample sizes among groups are unequal, as it is in our case.

TABLE 4

LOGIT model for the variable Buyer's Information Sharing (BIS)

VARIABLES	(1) ***Control Variables***	(2) ***H1, H2, H3*** Coefficients	Odds Ratio	Marginal effects *Pr (BIS)=.40736799*
Buyer´s bargaining Power (High=1/0 otherwise)		-1.426 ***	0.240 ***	-0.332 ****
		(-2.98)	(-2.98)	(-3.18)
Delay costs (High=1 / 0 otherwise)		-1.430 *	0.239 *	-0.323 *
		(-2.41)	(-2.41)	(-2.69)
Impatience (Buyer's Bargaining Power x Delay Costs)		1.556 *	4.741 *	0.370 *
		(2.02)	(2.02)	(2.26)
Buyer's First Counterproposal	0.210 ***	0.195 **	1.216 **	0.047 **
	(2.83)	(2.76)	(2.76)	(2.79)
Rounds	-0.028	-0.133	0.875	-0.032
	(-0.15)	(-0.66)	(-0.66)	(-0.66)
Trust	0.000	-0.004	0.996	-0.001
	(-0.04)	(-0.35)	(-0.35)	(-0.35)
Distributive	-1.013	-1.241	0.289	-0.249
	(-1.24)	(-1.36)	(-1.36)	(-1.82)
Constant	-24.958	-21.821	0.000	
	(-2.79)	(-2.55)	(-2.55)	
Observations	153	153	153	
Pseudo r^2	0.146	0.172	0.172	
χ^2	25.13	28.76	28.76	
Degrees of freedom	4	7	7	

This table shows the results of the LOGIT regression. The first column shows the estimated coefficients of the control variables. The second column shows the estimated coefficients for the whole model. The fourth column displays the estimated odds ratio for the total model. The las columns shows the marginal effects for each variable of the whole model. Estimated coeficients, odds ratios and marginal effects for each variable are reported on the top row and $\chi 2$-test values appear in brackets below each coefficient. +,*,**,***,**** indicate significance at 10%, 5%, 1% , .5% and .1% levels correspondingly.

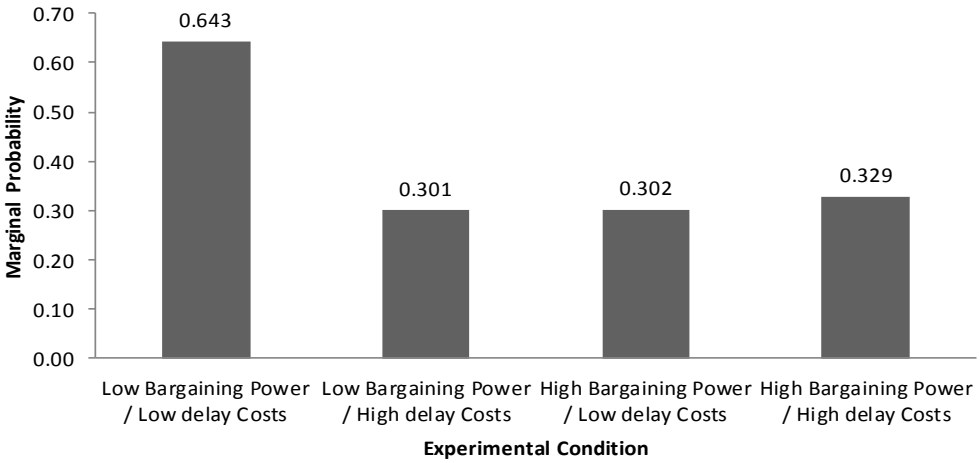
As we can see, the *Buyer's Bargaining Power* has a negative and significant impact on the buyer's willingness to share information.

This result is aligned with previous empirical findings (Van den Abbeele et al. 2009) and provides evidence supporting H1. Likewise, the *Delay Costs* faced by the buyers have a significant and negative influence on her information sharing behavior. In other words, H2 is also supported. On the other hand, as expected, the impatience effect turned out to be positive and significant, suggesting that, as expected, increases in the delay costs are capable of diminish the negative effect of bargaining power on information sharing. This

finding supports H3. Figure 2 shows the predicted probabilities corresponding to the four experimental conditions. The probability of disclosing information of those buyers in the high bargaining power-high delay costs group (0.33) is higher than the probability of those buyers assigned to the High bargaining power-Low delay costs condition (0.30).

FIGURE 2

Predicted Probabilities



This figure shows the marginal probabilities calculated using the logistic regression model presented in table 4. all probabilities are significant at the 1% level. correspondingly. Calculations were made taking the variables *Rounds* , *Initial offer* , *Trust* and *Distributive* at mean values.

Regarding the control variables, the Buyer's First Counterproposal was found highly significant, while the results indicate the factors such trust, distributive behavior or even the number of rounds negotiated did not exert an influence on the buyer's willingness to share information.

V. DISCUSSION AND CONCLUSIONS

In this paper, we explore the notion that the combined action of delay costs and bargaining power is able to stimulate buyer's impatience for reaching agreements and reduce the negative effect of bargaining power on information sharing. More specifically, we test this

idea in an experimental setting simulating a non-cooperative bargaining process between two supply chain members (i.e. an independent buyer and a seller) with alternating offers (started always by the seller) and one-sided incomplete information (buyer-side). We used a 2x2 experimental design where we manipulated the relative power (high and equal) as well as the cost of delaying the agreements (high or low) of the participants.

Our findings indicate that, despite the fact that separately, both the buyer's bargaining power and the delay costs have a negative effect on buyer's willingness to share information, the combined effect of them creates an incentive, that we refer to as impatience, leading buyer's to share more information. Our rationale to explain this effect is based on the argument that as the costs of delay increase, firms expecting higher benefits from negotiations will be more impatient to reach agreements since their potential losses from delaying negotiations will also be larger. Given that bargaining power is positively linked to trading profits, we claim that most powerful bargainers will be more impatient and this impatience will be even higher as the delay costs rise up. On the other hand, since the disclosure of information might help partners to coordinate faster and shorten the length of negotiations, most impatient buyers may have an additional motivation to share information in order to speed up agreements. Based on our results, we conclude that the economic incentives created by potential penalizations for delay are able, at least at some extent, able to reduce the natural tendency of most powerful buyers to hide information.

Even when we do not control for the individual's natural fairness propensity, we believe that what might look as a fair behavior could be instead explained in terms of the strategic reality of the negotiation (Binmore et al. 1991). This is, keeping the individual's propensity

to fairness constant, bargainers facing higher delay costs are motivated to offer fair deals in order to reduce the length of their negotiations. Anyhow, the low presence of distributive negotiation approaches (only around 3% of the buyers) seems to indicate that traders preferred the sharing of information over the use of coercive techniques as a mechanism to speed up agreements. Further experimental research may be needed in order to clarify this issue. In the same vein, previous theoretical and experimental results (Black and Bulkley 1988; Valley et al. 2002) stating that the voluntary disclosure of information acts as a key shortening factor of the length of negotiations were corroborated by our results. Preliminary analysis shows that in our setting, once a buyer releases his private information, the negotiations were closed immediately in almost all cases. It is noteworthy that the buyer's disclosure of information was usually accompanied by a fair counter offer (usually the one splitting the cake in equal parts). These ideas indicate that buyers used their private information to provide the sellers with some assurance regarding the fairness of the buyer's counteroffers. Complimentary research is needed in order to demonstrate this matter.

Finally, our results regarding the influence of bargaining power and delay costs on buyer's willingness to share information were somehow conditioned by the bargaining task used in the experiment. In the employed bargaining task, the seller submitted the first offer of the negotiation to the buyer. Since the power position of buyers influenced negatively the first offer, in many cases the buyers received offers that they found optimal to accept. In this cases (around 50% of the negotiations), negotiations were closed in the first round, eliminating any chance for sharing information in subsequent periods. Further research may analyze if other bargaining tasks (for example, one in which the buyer submits the first offer in the negotiation or one in which the seller still submitting the first offer but the

buyer have the chance to transmit information prior to it) may enhance the more powerful buyer's incentives to share private information, maybe to the point of observing a positive relation between bargaining power and private accounting information sharing.

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